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WHAT IS CLAIMED:

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- 1. A purified polypeptide comprising an amino acid sequence selected from the group consisting of:
 - a) the amino acid sequence of SEQ ID NO:2, and
- b) a fragment of SEQ ID NO:1 comprising the kinesin motor domain from amino acid residue 1 to amino acid residue 340.
- 2. An isolated polypeptide of claim 1, having a sequence of SEQ 10 ID NO:2.
 - 3. A composition comprising a polypeptide of claim 1 and a pharmaceutically acceptable excipient.
- 4. A composition of claim 3, wherein the polypeptide has the sequence of SEQ ID NO:2.
 - 5. A method for screening a compound for effectiveness as an agonist of a polypeptide of claim 1, the method comprising:
 - a) exposing a sample comprising a polypeptide of claim 1 to a compound, and
 - b) detecting agonist activity in the sample.
- 6. A method for screening a compound for effectiveness as an antagonist of a polypeptide of claim 1, the method comprising:
 - a) exposing a sample comprising a polypeptide of claim 1 to a compound, and
 - b) detecting antagonist activity in the sample.
- 7. An isolated and purified polynucleotide encoding a polypeptide comprising an amino acid sequence of SEQ ID NO:1.
 - 8. An isolated and purified polynucleotide which hybridizes under conditions of 250 mM NaCl, 25 mM trisodium citrate, 1% SDS, 50% formamide and

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 $200 \mu g/ml \text{ ssDNA}$ at 42°C. , and wash conditions of 15 mM NaCl, 1.5 mM trisodium citrate, and 0.1% SDS at 68°C to the polynucleotide of claim 7.

9. A method for detecting a polynucleotide, the method comprising the steps of:

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- (a) hybridizing the polynucleotide of claim 7 to at least one nucleic acid in a sample, thereby forming a hybridization complex; and
- (b) detecting the hybridization complex, wherein said hybridization is performed at 42°C in a solution containing 250 mM NaCl, 25 mM trisodium citrate, 1% SDS, 50% formamide and 200 μg/ml ssDNA followed by washing at 68°C in a solution of 15 mM NaCl, 1.5 mM trisodium citrate, and 0.1% SDS wherein the presence of the hybridization complex correlates with the presence of the polynucleotide in the sample.
- 15 10. The method of claim 9 further comprising amplifying the polynucleotide prior to hybridization.
 - 11. An isolated and purified polynucleotide comprising the polynucleotide sequence of SEQ ID NO:1.
 - 12. An expression vector comprising the polynucleotide of claim 7.
 - 13. A host cell comprising the expression vector of claim 12.
- 25 14. A method for producing a polypeptide, the method comprising the steps of:
 - (a) culturing the host cell of claim 13 under conditions suitable for the expression of the polypeptide; and
 - (b) recovering the polypeptide from the host cell culture.
 - 15. Method of modulating cellular proliferation in a mammal in need thereof comprising administering to said mammal an amount of a pharmaceutical composition effective to modulate cellular proliferation, said composition comprising a pharmaceutically acceptable vehicle and a HsCENP-E protein characterized as

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having an ATP binding site, a motor domain and an amino acid sequence as set forth in SEQ ID NO:2.

- 16. A method for inhibiting HsCENP-E mediated/induced cellular
 5 proliferation of a cell in culture, said method comprising the steps of:
 - a) providing an oligonucleotide comprising at least 18 contiguous nucleotide bases which are perfectly complementary to a nucleotide base sequence region contained in a nucleic acid sequence as set forth in SEQ ID NO.1, and
- b) contacting said cell with said oligonucleotide under conditions such that said oligonucleotide is delivered within said cell and hybridizes with said nucleotide base sequence region, thereby inhibiting HsCENP-E mediated/induced cellular proliferation of said cell.
 - 17. A method of detecting the presence of cancer in an individual
- 15 comprising:

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- (a) obtaining a biological sample from said individual;
- (b) incubating said biological sample with at least one antibody which is immunoreactive with a gene product encoded by the nucleic acid molecule comprising the nucleotide sequence as set forth in SEQ ID NO:1
- (c) detecting immunoconjugates which form as a consequence of the incubation of step (b); and
- (d) relating the amount of immunoconjugates of step (c) to the presence of cancer, wherein cancer is present when said amount is greater than a threshold value.
- 18. An isolated and substantially purified polypeptide encoded by the nucleotide sequence of SEQ ID NO:1.